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VALUE OF SWALLOWS AS INSECT DESTROYERS.

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The present circular has a twofold purpose: First, to make known the great value of swallows as insect destroyers and to emphasize the importance of protecting them wherever found; second, to widely publish the peculiar value of these birds in the war now being waged in the South against the cotton boll weevil, and to ask for the co-operation of citizens of Northern States, where these birds chiefly nest, in an effort to increase their numbers.

That insect-eating birds are of immense value to the farmer and the forester is so well known that their protection is now believed to be absolutely necessary to the welfare of any country. But the value of certain kinds in the United States has been recently emphasized through the invasion of the cotton States by a new and destructive insect—the boll weevil. This new pest, despite every effort to stay its march, is spreading at the rate of about 50 miles a year, and sooner or later is certain to infest the entire cotton-producing area—a fact which not only seriously concerns the southern planter, but in its ultimate consequences affects the well-being of the whole country.

Birds are among the natural enemies of the weevil, but by themselves are quite inadequate to the task of controlling the ravages of the pest. The losses it inflicts are of such magnitude, however, that no aid can be safely neglected, especially when so important as the services rendered by birds. As the result of investigations by the Biological Survey, thirty-eight species of birds are now known to feed upon the weevil. Prominent among these are the several species of swallows, including the purple martin.

The martin, the barn swallow, the bank swallow, the cliff swallow, and the rough-wing breed—some of them only sparingly—in Texas and elsewhere in the South. They breed also in the North, but the tree swallow and the cliff swallow—very important members of the group—appear in the South, the former during spring and fall migration only.

Steps have been taken to acquaint the farmers and other residents of Texas and the remaining cotton-producing States of the importance of increasing the numbers of the local species and of extending the range of certain species in the cotton districts. This may be done by strictly enforcing the laws protecting swallows and by providing

additional accommodations for nesting. These steps alone, however, are not sufficient. It is very important also that all of the swallow tribe nesting in the Northern States and migrating through the cotton belt be increased to the limit, more particularly since in late years a steady diminution of their numbers has been noted.

Tree swallow.—The tree swallow, as is well known, has been persecuted by the English sparrow until it has entirely abandoned many districts where formerly it abounded. Unless a systematic effort be made to reduce the number of sparrows and to protect from invasion the boxes put up for the occupancy of swallows, it is difficult to see how the tree swallow can reoccupy the old territory from which it has been driven, or even long hold its present area. An energetic war on the English sparrow and the careful protection of the swallow domiciles in a few years would result in a complete change of the situation, so far as this, one of the most beneficial of the swallow tribe, is concerned.

Barn swallow.—The barn swallow formerly was abundant throughout the Northern States, especially in New England. The tightly built modern barn, however, no longer invites the presence of the barn swallow by affording it friendly shelter, and the birds are becoming scarcer and scarcer. To provide openings in modern barns and to encourage the presence in them of colonies by providing convenient nesting sites are easy and effective methods by which this beautiful species may be greatly increased in numbers. This bird also requires protection from the English sparrow, which in one foray has been known to kill the young and destroy the eggs of a large colony.

Bank swallow.—The well-known bank swallow, as its name implies, nests in sand banks in holes of its own digging. Some farmers in the Northern States take special pains to protect their colonies of bank swallows from the marauding boy and the prowling cat. Some even take pains to excavate suitable banks on their farms and devote them to the exclusive use of the swallows. Gravel and sand banks are so numerous throughout the North, especially in New England, that at trifling expense the number of colonies of bank swallows may be vastly increased, to the advantage of every farmer North and South, and to that of every nature lover as well.

Cliff swallow.—The curious pouch-shaped mud structures of the cliff swallow, attached under eaves or to the face of cliffs, are a sight familiar enough in the Northern and Western States, but in the cotton States, save Texas alone, they are wanting, the bird that makes them being exclusively a migrant. The English sparrow persecutes also the cliff swallow; hence, in the North, the bird is much less common than formerly. Under the mistaken idea that cliff swallows are not desirable neighbors, the nests, especially when near houses, are often destroyed and the birds driven away. All birds are more or less subject to parasites, especially when nesting, but the parasites are not bedbugs nor the kinds obnoxious to man, and no one need banish the swallows for fear of trouble from this source. In Germany the presence of swallows around houses is so much desired that artificial nests made of clay or other material are put up in order to attract birds by saving them the labor of

constructing their own domiciles. No doubt our own cliff swallows would be quick to respond to a similar offer of ready-made dwellings, rent-free, and in this way the range of this extremely useful species might be materially increased. The cliff swallow is one of the most indefatigable insect destroyers extant, and every motive of patriotism and humanity should prompt communities among which they live to protect and foster them in every possible way.

Purple martin.—This, the largest and in many respects the most beautiful of all our swallow tribe, is the most local and the least numerous. In New England, and perhaps in most of the Northern States generally, this fine bird is steadily diminishing in numbers. The English sparrow often takes possession of its boxes, ruthlessly kills the young martins or throws out the eggs, and usually succeeds in routing the colony and appropriating the boxes. When measures are not taken to abate the sparrow nuisance in the immediate vicinity of martin colonies, the usual result is that the martins are forced to abandon their houses. The habit of putting up houses for the accommodation of martin colonies is not as common in the North as it formerly was, and to this indifference to the martins' presence, to persecution by the sparrow, and to losses due to the prevalence of cold storms during the nesting season, no doubt, is due the present scarcity of the bird.

Simply to put up martin boxes in localities where the birds do not now live may or may not ultimately result in the formation of new colonies, for the martin is conservative by nature and loves its birthplace too well to colonize strange localities until forced away by lack of accommodations in the old home. More active measures therefore, have been suggested to induce colonization, particularly the transfer at night of one or more martin houses, with both parent birds and nestlings, from their old homes to new ones.^a

Having their nestlings to care for, the old birds probably will not always desert them, but are likely to resume parental duties in the strange neighborhood, especially if the old home is far distant. The theory is that the following spring on their return from the South the young martins, and possibly their parents, will go back to the new home. As the young can be raised by hand without serious difficulty,

^a This experiment was tried in the zoological gardens of Philadelphia in 1889 by Mr. Robert D. Carson, who, by means of a trap house, secured a colony of nine pairs with 32 young from the grounds of Mr. Josiah Hoopes, of West Chester, transporting them the distance of about 20 miles by train at night. When released next morning the old birds deserted the young and returned to West Chester. The temptation of the old home so close by proved too strong even for parental affection. Most of the young, however, were successfully raised by hand feeding, being fed chiefly cockroaches, grasshoppers, crickets, meal worms, and "prepared food." This is a mixture intended for insectivorous birds, and according to Mr. Carson was well liked by the nestlings and agreed well with them. It consists of "dried and ground beef heart, maw meal, ground zweiback, boiled and mashed white potatoes, grated raw carrot, and grated hard-boiled eggs." Probably any similar mixture would answer equally well. A small colony resulted from this experiment which would probably have proved permanent but for the fact that additional houses were put up in West Chester, and after two years the colony deserted to the old neighborhood. Though only temporary success was achieved, the experiment is encouraging and points the way to ultimate success. For the above facts I am indebted to Mr. Charles J. Pennock, of Kennett Square, Pa.

it may prove easier to start the new colony with nestlings alone, feeding them on meal worms, grasshoppers, and the like. Six or eight pairs can well be spared from a strong colony without unduly weakening it. This method promises well, and if the experiment can be tried from year to year, even on a small scale, a gradual increase in the number of martin colonies is likely to result and new centers of distribution to be formed.

From the standpoint of the farmer and the orchardist, perhaps no birds more useful than the swallows exist. They have been described as the light cavalry of the avian army. Specially adapted for flight and unexcelled in aerial evolutions, they have few rivals in the art of capturing insects in midair. They eat nothing of value to man except a few predaceous wasps and bugs, and in return for their services in destroying vast numbers of noxious insects ask only for harborage and protection. It is to the fact that they capture their prey on the wing that their peculiar value to the cotton grower is due. Orioles do royal service in catching weevils on the bolls; and black-birds, wrens, flycatchers, and others contribute to the good work; but when swallows are migrating over the cotton fields they find the weevils flying in the open and wage active war against them. As many as 47 adult weevils have been found in the stomach of a single cliff swallow.

What may be termed the interstate relations of birds are not always as simple as in the case of the swallows. Some birds are most desirable summer residents of Northern States, but when migrating greatly damage certain crops in the Southern States. Not so with the swallows. Their beauty, their graceful flight, and their sociability insure them a welcome everywhere and endear them to every lover of nature. Their esthetic value, however, great as it is, is not so important as their economic worth, so constant and effective is the warfare they wage against the insect hosts which but for them and other avian benefactors would render successful agriculture impossible. To the Southern States may safely be intrusted the duty of protecting and augmenting in every possible way the numbers of resident birds that prey upon the boll weevil. But it is for the Northern States to aid the good work so far as lies in their power. An enlightened patriotism knows no State boundaries. The insect enemy of the farmer of either district is the enemy of the common weal, and only from cooperation can come a full measure of success.

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